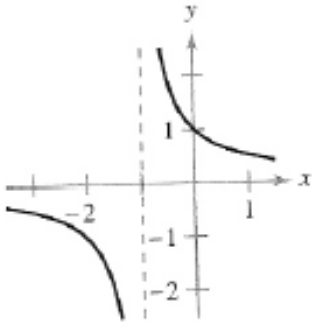


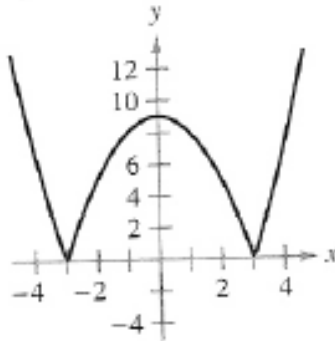
Describe the x -values at which f is

- a) continuous
- b) differentiable

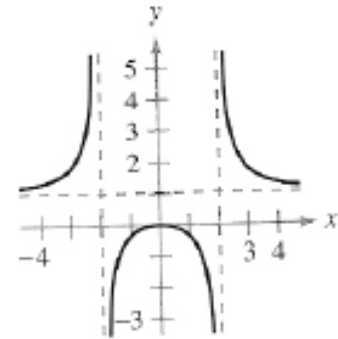
1) $f(x) = \frac{1}{x+1}$



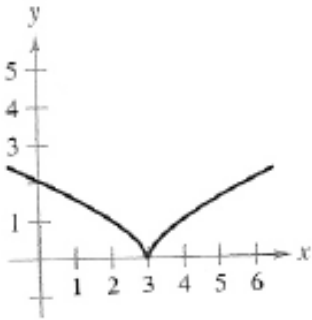
2) $f(x) = |x^2 - 9|$



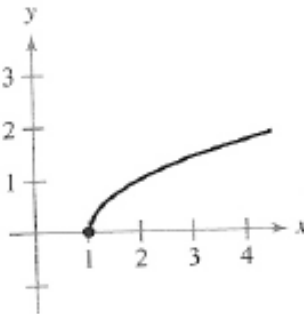
3) $f(x) = \frac{x^2}{x^2 - 4}$



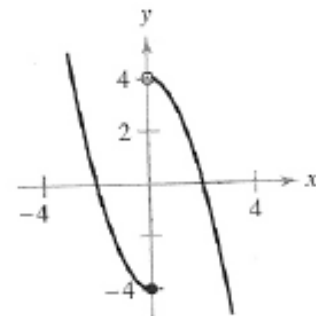
4) $f(x) = (x - 3)^{2/3}$



5) $f(x) = \sqrt{x-1}$



6) $f(x) = \begin{cases} x^2 - 4, & x \leq 0 \\ 4 - x^2, & x > 0 \end{cases}$



Determine if the function is differentiable at the given value.

7) $f(x) = \begin{cases} x, & x \leq 1 \\ x^2, & x > 1 \end{cases}, \quad x = 1$

8) $f(x) = \begin{cases} x^2 - 1, & x \leq 2 \\ 4x - 3, & x > 2 \end{cases}, \quad x = 2$

9) Sketch the graph of a continuous function such that:

$f(0) = 2;$

$f'(x) = -3$ for $-\infty < x < \infty$

10) Sketch the graph of a continuous function such that:

$f(0) = 4$

$f'(0)$ is undefined

$f'(x) < 0$ for $x < 0$

$f'(x) > 0$ for $x > 0$